

SCIENTIFIC RESULTS FROM THE MAMMAL SURVEY,  
No. XIII.

A.—ON MURIDÆ FROM DARJILING AND THE CHIN HILLS.

BY OLDFIELD THOMAS.

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1.—A NEW GENUS OF GIANT RAT FROM SIKKIM.

Among the collections recently made in British Sikkim by Mr. N. A. Baptista for the Bombay Survey with the active help and interest of Mr. R. S. Lister and Mr. H. Stevens are three Giant rats belonging to two species, both much larger than any other strictly Indian species of *Epimys*, and rivalling Bandicoots in size. One of them, represented by a single specimen, is clearly an *Epimys*, and is dealt with under the next heading below.

The other, like as it is to a true rat externally, proves on study of its skull to show such dental characters as to necessitate the formation of a new genus for its reception. This may be called:—

DACNOMYS, g. n.

External characters and quality of fur as in *Epimys*. Mamæ of genotype 2-2=8.

Skull with prominent overhanging supraorbital ridges, more developed than in most *Epimys*, less than in *Lenomys* and *Lenothrix*; the shape of the crown between the ridges about as in *Lenothrix*. Anterior plate of zygoma very slightly projected forward, about as in *Diplothrix*,\* rather more than in *Lenothrix*; less than in *Lenomys*, much less than in *Epimys*. Bullæ quite small.

Teeth.—Incisors normal. Molars very large, broad and heavy as compared with all forms of *Epimys*, nearly equalling those of *Lenomys*, the length of the series more than half the distance from the back of M<sup>3</sup> to the condylion; breadth of palate between first molars rather greater than the breadth of a molar.

In structure, owing to their size and angularity, the teeth have a strong superficial resemblance to those of *Lenomys*. But in detail

\* G. n. Genotype *Diplothrix legata* (*Lenothrix legata*, Thos. Ann. Mag. N. H. (7) XVII, p. 88, 1906) from the Lin Kiu Islands.

A further study of these Murines convinces me that the Liu Kiu *Lenothrix legata* ought to be generically distinguished from its Sumatran ally *L. cana*, Miller. The great breadth of the crown area between the parietal ridges, which is broader than long, and gives quite a different aspect to the upper view of the skull, the greater projection forward of the zygomatic plate, and certain detailed differences in the molars, described in the original account, are my chief reasons for this separation, which is also in accord with the geographical distribution of the two forms. I may further note that in *Diplothrix* the posterior lamina of M<sup>3</sup> consist of two elements, an internal and a median cusp, not of a single cusp only as Mr. Miller says is the case in *Lenothrix cana*. M<sup>1</sup> and M<sup>2</sup> practically without antero-external supplementary cusps.

they agree on an exaggerated scale more with those of certain species of *Epimys* (e.g., *E. macleari* and *blanfordi*), with some approach to those of *Lenothrix*.

M<sup>1</sup> with the laminae strongly curved and zigzagged (suggesting *Lenomys*); inner cusps on first two laminae large, triangular, with projecting points behind, their tips sticking up high above the well marked valley between them and the median cusps; no internal or "x" cusps on the third lamina; external cusps little developed, about as in *Epimys macleari*. M<sup>2</sup> with antero-internal cusp, large, antero-external obsolete. M<sup>3</sup> with large antero-internal cusp, and two equally projecting salient angles on the internal side behind that cusp. Lower teeth without special peculiarities. Root of lower incisors not projecting in a capsule on the outer side of the mandible.

Genotype.—*Dacnomys millardi*, sp. n.

The proper position of this giant rat is somewhat doubtful. At first I supposed it to be near *Lenomys* and *Lenothrix*, the angularity of the molars and the presence in them of the characteristic connecting points between the laminae being somewhat as in those genera, to which however there is no external resemblance. But Mr. Hinton has kindly drawn my attention to the fact that certain Eastern species of *Epimys*, notably *E. macleari* and *blanfordi*, have in different degrees, a more or less similar molar structure, *Dacnomys* differing from these mainly by the disproportionate size of the teeth, and the reduction of the zygomatic plate. It would thus appear to form another link in a chain of forms ranging in molar structure from the simplified *Epimys rattus* type, through (1) *E. macleari* and its allies, (2) *Dacnomys*, and (3) *Lenothrix* and *Diplothrix* to (4) the genera with such highly complex zigzagged teeth as those of *Lenomys*, *Crateromys* and *Mallomys*. Concurrent with the greater complexity of the molars there is a reduction in the anterior projection of the zygomatic plate, and except in the two last named genera, an increase in the heaviness of the supraorbital and parietal ridges. As a ready means of diagnosis it may be noted that in every *Epimys*, the length of the teeth goes more than twice in the distance from the back of M<sup>3</sup> to the back of the condyle, while in *Dacnomys* it goes less than twice.

*Dacnomys millardi*, sp. n.

A large plain looking brown rat with unicolor tail. Size about as in a small bandicoot. Fur of normal character, rather short and thin, hairs of back about 15-16 mm. in length; the longer piles not excessively elongated. General colour above near "olive brown", finely lined with blackish and grizzled with dull buffy. Sides rather lighter. Belly pale brownish, not sharply defined from the colour of the flanks, the hairs pale slaty brown at base, dull creamy white

terminally; throat, large axillary patches, and inguinal region creamy whitish to the bases of the hairs. Head rather greyer than back. Ears of medium size, brown. Hands brown to metacarpals, digits whitish; feet dull brown, little lighter terminally. Sole pads large and rounded; fifth hind toe, without claw, reaching to the end of the first phalanx of the fourth. Tail longer than head and body, finely scaled (rings 10 to the centimeter) very thinly haired, the fine hairs not lengthening at the tip; uniformly dark brown above and below to end. Mammæ, 2-2<sub>1</sub>8.



Skull with long narrow nasals. Supraorbital ridges heavy, but dying away towards the posterior end of the parietals (in the young adult type, broken away in the older specimen). Palatal foramina not quite reaching back to the level of  $M^1$ ; posterior edge of palate level with the middle of  $M^3$ . Bullæ quite small.

Teeth as described above.

Dimensions of type, measured in flesh:—Head and body 228 mm.; tail 325; hindfoot 50; ear 26. (Another older specimen measures, head and body 270; tail 330; hindfoot 53; ear 29).

Skull, greatest length 55; condylo-incisive length 51; zygomatic breadth 25; nasals  $21 \times 6.2$ ; interorbital breadth 7.6; breadth of brain case 19.5; zygomatic plate 4.8; palatilar length 25; palatal foramina 10.2; upper molar series 11.2, breadth of  $M^3$ .

*Hab.*—Neighbourhood of Darjiling, Sikkim. Type from Gopal-dhara, 3,440', another specimen from Pashok, 3,500'.

*Type.*—Young adult female. B.M. No. 16.3.25.98 Original No. 41. Collected 6th May 1915, by N. A. Baptista. Presented to the National Museum by the Bombay Natural History Society.

In general external appearance *Dacnomys millardi* is very like the Tenasserim *Epimys validus*, but there is nothing resembling it in India. I may note that in the original description of *Mus bowersi*, Anderson, a length of the molars series is given which nearly corresponds with that in *Dacnomys*, but this is evidently a misprint, as is evident by the measurements and figure of the skull given later by Selater.

This fine animal forms the fourth new genus of Muridæ discovered in India by the Bombay Society's Survey, and is by far the most striking of all. Even as a species, that a new rat nearly a foot in length should be discovered near so well known a place as Darjiling is sufficiently astonishing, but that it should represent a new genus makes it a zoological discovery of very special interest. I have connected with this remarkable animal the name of Mr. W. S. Millard, to whose keenness, energy and generosity the Bombay Society's Survey so largely owes the great success it has attained.

## 2.—A NEW RAT ALLIED TO *EPIMYS SABANUS*, FROM DARJILING.

In company with the two specimens of *Dacnomys millardi* above described, and like them captured by Mr. Lister's coolies, the collection contains a single example of a fine rat representing the *Epimys sabanus* group, not hitherto known from any nearer locality than Trong, in the Malay Peninsular, whence *E. vociferans* was described.

I would propose to name this handsome and unexpected addition to the Indian Fauna

### *Epimys listeri*, sp. n.

Like *E. vociferans* but darker in colour.

Size large as compared with most Indian rats, though smaller than in *E. bowersi*. Fur crisp, not strongly spinous, though mixed with flattened bristles about  $\frac{1}{4}$  mm. in breadth and 15 mm. in length. General colour characters as usual in *sabanus* and its allies, that is with a more or less fulvous body, sharply contrasted pale underside and long tail with lighter end. Dorsal colour however darker than in the other species, approaching "mars brown", with but little fulvous suffusion and much blackish lining, sides paler brown; undersurface sharply defined creamy white, the hairs white to their bases. Head greyer than back. Ears large, grey brown, practically naked. Fore limbs greyish brown in front down to the middle line of the metacarpals, digits, sides of metacarpus, and inner aspect of arm white. Hind limb of similar pattern, but the white less extended, confined to the tips of the toes, the edges of the metatarsus and a comparatively narrow line down the front side of the leg, leaving its inner side brown. Tail much longer than head and body, though not so excessively long as in *E. sabanus*, above brown for

the basal half, both scales and hairs, then quite gradually lightening to white at the tip, the terminal hairs quite white; below the scales are rather lighter proximally, quite white terminally, and the hairs are white throughout; but the limits of change are nowhere sharply defined.



Skull on the whole fairly like that of *E. vociferans*, the] brain case rather broader between the parietal ridges; zygomatic plate rather more projected forward; palatal foramina a little longer; molar series rather shorter. Incisors similarly forming a large segment of a small circle, their tips more directed backward towards the throat than in *E. bowersi*, and in fact more than in any other rodent that I have examined.\*

\* The angle at which the incisors are set in the jaw being a character of considerable systematic importance it might be of use if a method could be found of gauging it accurately, instead of merely stating that they are "thrown forwards" or "turned backwards." I find that if one limb of a small goniometer be placed in the line of the grinding surface of the molars, the angle at which the exposed part of the incisors come down may be fairly accurately measured if the line of the terminal millimeter of their front enamel-clad surface be put close to and parallel with the edge of the other limb. By this method the incisors of *Epimys listeri* may be said to be set at an angle of about  $26^{\circ}$  or  $28^{\circ}$  to the line of the tooth row, other members of the same group  $28^{\circ}$  to  $30^{\circ}$ , *E. rattus* about  $40^{\circ}$ — $45^{\circ}$ , *E. berdmorei* about  $45^{\circ}$ — $50^{\circ}$ . A *Rhizomys* comes out at  $55^{\circ}$ , a *Bathyergus* and a *Nyctoleptes* at  $75^{\circ}$ , and a *Cannomys* at about  $90^{\circ}$ , while thrown out beyond the right angle such an extreme form as *Heliophobius* may be measured as  $110^{\circ}$  to  $120^{\circ}$ .

These angles cannot be measured within a limit of accuracy of some  $5^{\circ}$ , more or less, but even so they represent an improvement in the direction of defining the set of the teeth, as compared with any attempt to describe it in words.

Care must be taken that the incisors to be measured are of normal extension, neither accidentally shortened or pushed in on the one hand, nor pulled out or overgrown on the other, as any of these conditions would invalidate the results obtained.

Dimensions of the type, measured in the flesh :—Head and body 210 mm.; tail 293; hindfoot 47; ear 30. Skull, greatest length 56; condylo-incisive length 51·5; zygomatic breadth 25·3; nasals 22·7; interorbital breadth 8·3; breadth of brain case 21·3; palatilar length 24; palatal foramina 8·2; upper molar series 9.

*Hab. of type.*—Pashok, Darjiling, 3,500'.

*Type.*—Adult male. B. M. No. 16·3·25·97. Original number 543. Collected 6th August 1915 by N. A. Baptista. Presented by the Bombay Natural History Society. A second specimen obtained in October.

This rat is at once distinguishable from any of its allies in British India by its conspicuously larger size. Its nearest relative is *E. vociferans* of the Malay Peninsular, from which, as already noted, it differs by its darker colour and the other details above recorded.

That two such distinct and striking new animals as *Dacnomys millardi* and *Epimys listeri* should be discovered in so comparatively well worked a region as Darjiling is most remarkable, and reflects great credit on Mr. R. S. Lister by whose help the Society's collector N. A. Baptista was able to form such a fine series at Pashok, and also to Mr. H. Stevens who gave him so much assistance at Gopaldhara. A full list of these collections will be later given in Mr. Wroughton's "Reports."

### 3.—ON THE LARGE RATS ALLIED TO *EPIMYS BOWERSI*.

In Burma and ranging southwards to the northern parts of the Malay Peninsular there occur a number of large iron-grey rats forming the "*bowersi* group" of Bonhote.

Of these rats Mr. Mackenzie has sent from the Chin Hills a very fine series, whose study enables me to clear up several points which had been previously doubtful.

Mr. Mackenzie's specimens prove to be readily separable into two distinct species, a larger, the true *bowersi*, with 2—2=8 mammæ, and a smaller with 3—2=10.

A difference in the number of the mammæ between Tenasserim and Carin examples had already been noticed by me when working out Signor Fea's specimens in 1892, but the size difference in the skulls was not observed, for skulls were comparatively little thought of in those days, and the mammary character was not considered of sufficient constancy to base specific distinction upon.

Later on Mr. Miller described from Trong, in Lower Siam, a species of this group as *Mus ferreocanus*, and the British Museum owes to the authorities of the Federated Malay States Museums examples representing this animal, and fortunately showing the number of the mammæ, which proves to be 2—2=8, as in *E. berdmorei*, not as in the smaller Burmese and Tenasserim species.

The forms I now recognize may be distinguished as follows:—

- A.—Size very large, the skull about 55—57mm. in greatest length. Colour brown, less grey. Mam-mæ 2—2=8. Upper Burma and Yunnan ... .. *Epimys bowersi*, And.
- B.—Size smaller, skull about 53mm. Colour blackish grey; feet nearly wholly brown. Mam-mæ 2—2=8. Malay Penin-sular ... .. *E. ferreocanus*, Mill.
- C.—Size again slightly smaller, skull about 51mm. Colour clearer grey. Mammæ 3—2=10 ... .. *E. mackenziei*, sp. n.
- $c^1$ —Feet averaging shorter. Tail with its end white for about a third or two-fifths of its length. Upper Burma ... .. *E. m. mackenziei*.
- $c^2$ —Feet proportionally longer. Only the tip of the tail white. Tenasserim ... .. *E. m. feae.*, subsp. n.

*Epimys bowersi*, And.

The following are the dimensions of a good adult female of this species, sent by Mr. Mackenzie:—

Head and body 246mm.; tail 268; hindfoot 54; ear 34·5. Skull, greatest length 55 (57 in an older specimen), condylo-incisive length 52·5; zygomatic breadth 28; nasals 22; interorbital breadth 8; breadth of brain case 21; palatilar length 25·8; palatal foramina 10·4; upper molar series 8·6.

Mr. Mackenzie's specimens were collected in the "Chin Hills, 50 miles west of Kindat; altitude 5,000'." One example was also obtained by Mr. S. F. Hopwood in 1913 at Kindat itself. Otherwise the only representative of this species in the British Museum had been that from Machi, Manipur, recorded in my list of the Hume Collection (P. Z. S. 1886, p. 62).

*Epimys ferreocanus*, Mill.

This species has been fully described by Mr. Miller, with the exception of its mammary formula, which I am now able to make out to be 2—2=8, as in *E. bowersi*.

The specimens before me come from Gunong Ijaa, Perak, 4,500', and were presented by the Federated Malay States Museum through the kindness of Mr. H. C. Robinson.

The measurements of these specimens may be recorded for comparison :—

Head and body 253mm.; tail 260; hindfoot 53; ear 31. Skull, greatest length 53·7; condylo-incisive length 51·2; zygomatic breadth 26·8; nasals 24·4; palatilar length 25·4; palatal foramina 9·6; upper molar series 9·8.

*Epimys mackenziei*, sp. n.

Size rather less than in *E. ferreocanus*, therefore considerably less than in *E. bowersi*, found in the same region. Fur thin, sparse, with little underfur, hairs of back about 15mm. in length. General colour of back iron grey (not Ridgway's iron grey, more nearly his "deep purplish grey" but browner) finely grizzled with whitish. Sides lighter grey. Undersurface creamy white, the hairs white to their bases, line of demarcation on sides not very sharply defined. Head like back. Ears large, naked, grey. Hands whitish, more or less brown on the centre of the metacarpals. Feet similarly dull whitish, with some brown on the metatarsals. Tail long, coarsely scaled (about 10 rings to the centimeter) grey-brown above, inconspicuously pale below for its basal three-fifths, then abruptly white all round, scales and hairs, the terminal hairs not markedly lengthened. Mammæ 3—2=10.

Skull, apart from its smaller size, very like that of *E. bowersi*, the braincase proportionally rather smaller, and the bullæ also smaller, the incisors, as in that species, set very vertically, not bent in towards the throat.

Dimensions of the type, measured in the flesh :—

Head and body 234mm.; tail 248; hindfoot 48; ear 30. Skull, greatest length 51; condylo-incisive length 49·4; breadth 26·4; nasals 20·5; interorbital breadth 7; breadth of brain case 19·3; palatilar length 24·7; palatal foramina 9·5; upper molar series 8·8.

*Hab.*—Chin Hills. Type from 50 miles west of Kindat, 5,000'.

*Type.*—Adult female. B. M. No. 16.3.26.65. Original number 340. Collected 26th April 1915 by J. M. D. Mackenzie and given by him to the Bombay Natural History Society. Presented by the Society to the National Museum. About a dozen specimens examined.

It is to Mr. Mackenzie's fine series that the discrimination of this species is due, and I have much pleasure in connecting his name with it. An earlier specimen from the Khasia Hills was in Mr. Blanford's collection, but owing to its having no skull, was never definitely determined.

Further south again Signor Fea obtained the specimens I referred with some doubt to *Mus bowersi*, but renewed examination shows that they may be considered as a special subspecies of the present animal.



*Epimys mackenziei fea*, subsp. n.

Size of body slightly less than in true *mackenziei*, but tail and feet averaging longer. Colour apparently about as in true *mackenziei*, except that there is rather more brown on the feet. Tail with only its extreme tip (8 mm. in the type) white, instead of its terminal two-fifths.

Skull essentially as in *mackenziei*, but zygomatic plate rather narrower, palatal foramina less open, bullæ rather smaller.

Dimensions of the type, measured on the spirit specimen:—Head and body 215 mm.; tail 261; hindfoot 51; ear 26. Skull, greatest length 50·5; condylo-incisive length 49; zygomatic breadth 25; nasals 20; interorbital breadth 7·8; breadth of braincase 19; palatal length 24·5; palatal foramina 9; upper molar series 9.

*Hab.*—Thagata, Muleyit Range, Tenasserim.

*Type*—Adult female. B.M. No. 88.12.1.47. Collected by L. Fea and presented to the British Museum by the Marquis G. Doria.

Another specimen, now in the Museo Civico, Genoa, had a tail 285 mm. in length (measured from anus) and hindfoot 52.

4.—THE RATS OF THE *EPIMYS BERDMOREI* GROUP.

Mr. Mackenzie obtained in the Chin Hills a fine series of the grey rat, coloured somewhat as in *E. bowersi* and *mackenziei*, but far smaller, which I recorded as "*Mus berdmorei*, Blyth" on Hume's specimens from Manipur.

In working these out I have had before me practically all the known specimens pertinent to the question, namely, (1) by the kindness of the authorities at Calcutta, the typical skull from Mergui, collected by Berdmore and described by Blyth, (2) Hume's specimens from Manipur, (3) one of the two specimens in the Fea collection, recorded by me as *Mus berdmorei* in 1892, now, by Dr. Gestro's help, transferred in exchange to the British Museum, (4) the type of *Epimys berdmorei magnus*, Kloss, recently described from S.-E. Siam, and (5) Mr. Mackenzie's series from the Chin Hills.

Study of this valuable material shows that there are in the group no less than four definable forms, namely, a distinct species in the North (to which 2 and 5 of the above list belong) and three subspecies of *E. berdmorei* in the South (1, 3 and 4).

These four forms are all very similar externally, though there is some difference in the amount of white on the tail. All have 3-2=10 mammæ, and the same general colour.

The skulls are all of the same characteristic shape (see Kloss's figure, P.Z.S., 1916,) with whitish or pale yellow incisors, these being much thrown forward, their angular relation to the molar series, measured as described above, about 70°-75° in the northern form, 80°-85° in the southern ones.

The different forms I recognize may be sorted as follows:—

- A. Bullæ quite small, little swollen.  
Incisors less thrown forward.  
Upper molars series 6·0-6·2 mm.  
Skull 38-40 mm. Tail end white  
all round. Manipur and Chin  
Hills ... .. *E. manipulus*, sp. n.
- B. Bullæ large and much swollen.  
Incisors more thrown forward.  
Tail end dark above ... .. *E. berdmorei*, Blyth.
- a. Upper molar series 6·0 mm. Skull  
39 mm. N. Tenasserim ... .. *E. b. mullulus*, subsp. n.
- b. Molar series 6·5 mm. Mergui... .. *E. b. berdmorei*, Bly.
- c. Molar series 6·8\* mm. Skull 46  
mm. S.-E. Siam ... .. *E. b. magnus*, Kloss.

The typical skull of *E. berdmorei* being broken, with the bullæ lost, I have had to make an assumption about the size of its bullæ. But both for geographical reasons and on account of the size of the space in the bone from which the bullæ have fallen, it seems fairly certain that they were of the large type, as in the Muleyit and Siamese races, not as in that further North in Manipur.

*Epimys manipulus*, sp. n.

Grey above, white to the bases of the hairs below. Hands and feet white above, the latter sometimes browner proximally. Tail with its terminal two-fifths to a half white all round, the proximal portion being brown about and whitish below.

Skull in general characters as in *E. berdmorei*; but the incisors rather less thrown forward and the bullæ conspicuously smaller. Molars small, as in the smallest-toothed race of *E. berdmorei*.

Dimensions of the type:—Head and body 182 mm.; tail 181; hindfoot 37; ear 24·5; weight 5 oz. Skull, greatest length 42; condylo-incisive length 40·5; zygomatic breadth 22; nasals 17·5; interorbital breadth 7; palatilar length 20; palatal foramina 8; upper molar series 6·0.

Another fully adult skull measures only 39 mm. in greatest length.

*Hab*:—Manipur and Chin Hills. Type from Kabaw Valley, 20 miles W. of Kindat, Upper Burma. Alt. 600'.

*Type*.—Adult female. B.M. No. 16. 3. 26. 78. Original number 172. Collected 30th January 1915 by J. M. D. Mackenzie, and given by him to the Bombay Natural History Society. Presented to the National Museum by the Society. About 40 specimens examined.

This Upper Burma rat is readily distinguishable from all the forms of *E. berdmorei* by its small bullæ and white tail-tip.

\*Mr. Kloss appears to have measured the teeth on the alveoli. I always include the crowns only, from the most anterior part of the enamel covered surface.

*Epimys berdmorei mullulus*, subsp. n.

Size smaller than in other forms. Colour apparently as in true *berdmorei*, but as the specimen has been preserved in spirit, an exact description of its colour is not possible.

Tail brown above, scarcely lighter below; its extreme end has apparently been lost during life, and may have been either brown or white, but was most probably the former.

Skull smaller than in *berdmorei*, which in turn is smaller than that of *magnus*; the shape rounder and more solidly built than in the former, the muzzle and interorbital region proportionally broader. Bullæ, while still of the large size found in this species as compared with *E. manipulus*, smaller than in *magnus*, those of the true *berdmorei* unknown. Palatal foramina narrowed, far less widely open than in the other forms. Molar teeth very small.

Dimensions of the type, measured on the spirit specimen:—

Head and body 170 mm.; tail 140 + (e) 5; hindfoot 33; ear 21·5. Skull, greatest length 39·2; condylo-incisive length 39; zygomatic breadth 21·8; nasals 14; interorbital breadth 6·8; palatal length 19·7; palatal foramina 8; upper molar series 6·0.

*Hab.*—Muleyit Range, Tenasserim. Type from Thagata.

*Type.*—Adult female in spirit. B. M. No. 16. 2. 16. 1. Collected by L. Fea. Received in exchange from the Museo Civico, Genoa.

While we have available for examination a very fine series of the northern *E. manipulus*, the three sub-species now recognized of *E. berdmorei* are only represented by a single specimen each, but these are so different from each other by the characters above recorded that there can be no doubt they should have distinct varietal names.

## 5.—A NEW MOUSE FROM SIKKIM.

Thanks to the material obtained by Mr. Crump in Sikkim for the Bombay Society's Survey I am now enabled to make a definite determination of a mouse which has been known to us by imperfect specimens for a very long time. It is the "*Mus nitidulus*" of my paper on Indian Rats and Mice, 1881, (P. Z. S., 1881, p. 550), but as was indicated when some Mt. Popa *Muridæ* were described recently (Journ. Bombay N. H. Society, XXIII, p. 30, 1914), is certainly not that species, and does not appear to be referable to any known form. It may be called

*Mus pahari*, sp. n.

Size large, one of the largest species of restricted *Mus*. Fur crisp, liberally mixed with spines; hairs on back about 7-8 mm. in length. General colour above greyish buffy, lined with blackish, the tips of the ordinary hairs buffy, of the spines black; basal seven-eighths of the fur slaty grey, but some of the specimens are

wholly slaty greyish on account as I believe, of the wearing off of the buffy tips to the hairs. Under surface greyish white, not sharply defined laterally, the hairs slaty basally, greyish white terminally. Ears of medium size, grey. Hands and feet dull white, the metapodials in some specimens brownish. Tail about the length of the head and body, finely scaled (17 rings to the cm.), very thinly haired, dark greyish above, inconspicuously lighter below. Mammæ 3—2=10.

Skull, as compared with that of Burmese *M. nitidulus*, decidedly larger, with large, smooth brain-case. Interorbital region very broad, its edges quite without ridges, hardly squared even in old specimens. Palatal foramina rather short, not or barely reaching back to the level of  $m^1$ . Back of palate about level with hinder edge of  $m^3$ .

Dimensions of the type, measured in the flesh:—Head and body, 94 mm.; tail, 91; hindfoot, 20; ear, 15. Skull:—Greatest length, 25·1; condylo-incisive length, 23·2; zygomatic breadth, 12·7; nasals, 10·1; interorbital breadth, 5; breadth of brain-case, 11·5; palatilar length, 10·5; palatal foramina, 5; upper molar series, 3·9.

*Habitat*—Sikkim. Type from Batasia, Tonglu. Alt. 6,000'. Other specimens from Chuntang, 5,350'.

*Type*.—Adult male. B. M. No. 15. 9. 1. 199. Original number, 6419. Collected 1st March, 1915 by C. A. Crump. Presented to the National Museum by the Bombay Natural History Society.

The material examined consists of four specimens obtained by Mr. Crump; one from "Sikkim," 4,500', purchased of the dealer Argent in 1848; and one in spirit from Darjiling, presented by Mr. W. T. Blanford in 1880.

This species is readily distinguished by its comparatively large size, crisp fur, large unridged braincase with broad interorbital space, and shortened palatal foramina.

I may perhaps here express my pleasure that these Survey specimens have at last thrown light on the characters of a species which has been a puzzle to me ever since I first began working on Indian *Muridae*.

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### B.—TWO NEW INDIAN BATS.

BY OLDFIELD THOMAS.

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#### *Pipistrellus cadornæ*, sp. n.

Allied to *P. kitcheneri*, Thos., but darker coloured.

General external appearance somewhat as in *P. ceylonicus*, but essential characters more as in *P. kitcheneri*. Size rather less than